DETAILS OF THE WEATHER IN THE UNITED STATES.

GENERAL CONDITIONS.

The tendency toward the formation of secondary cyclones slightly to the south of the primaries and the large number of barometric troughs in evidence during the month were characteristic features.

The influence of oceanic pressures on both eastern and western borders of the continent was also well marked and the movement of anticyclones southeastward over New England as noted for March also continued during the first decade of the month.

Pressure was everywhere above normal except over New Mexico and contiguous regions.

The temperature distribution was greatly like that of the previous month—warm to the eastward of the Rocky Mountains, cool to the westward.

There was more than the usual amount of rain from Texas northeastward to the Great Lakes, also over the northeastern Rocky Mountain slope. It was drier than usual in Atlantic Coast States and in the southern portion of the Gulf States, also in California, Nevada, and Idaho. The usual details follow.

CYCLONES AND ANTICYCLONES.

By W. P. DAY, Observer.

Most of the important cyclones of the month originated as secondaries over the Southwestern States, and during the first half of the month were confined to a relatively narrow track extending from this region toward the northeast. During the third decade anticyclonic areas occupied the North Central States, and the movement of cyclones became most erratic.

The anticyclones were generally offshoots from the North Pacific anticyclone.

Tables showing the number of cyclones and anticylones by types follow:

LOWS.	Alberta.	North Pacific.	South Pacific.	Northern Rocky Mountain.	Colorado.	Texas.	East Gulf.	South Atlantic.	Central.	Total.
April, 1922	5.0	1.0	.....	.....	5.0	3.0	.....	1.0	.....	15.0
Average number, 1892-1912, inclusive	3.4	1.6	0.9	0.5	1.3	1.0	0.3	0.6	0.7	10.3

HIGHS.	North Pacific.	South Pacific.	Alberta.	Plateau and Rocky Mountain region.	Hudson Bay.	Total.
April, 1922	7.0	.....	2.0	.....	1.0	10.0
Average number, 1892-1912, inclusive	1.6	1.6	3.1	1.0	0.6	7.9

FREE-AIR CONDITIONS.

By W. R. GREGG, Meteorologist.

Temperatures were slightly above the average at all altitudes and at all stations except near the surface at Due West, S. C.[1] In general, the departures were somewhat greater above than below 1 kilometer; they were practically the same at all stations and for the most part between 1° and 2° C. Reference to Climatological Chart IV will show a similar evenness of departure at the surface over all sections of the country east of the Rockies. Farther west there was a negative departure, most pronounced, though not excessive, in Utah and Nevada. At no time during the month were free-air temperatures remarkably high or remarkably low. The coldest period was from the 17th to 19th at Ellendale and Drexel, and from one to two days later at stations farther east and south. Even in this period the departures did not exceed 10° C. and for the most part were about 5° C. Positive departures of about the same amount were recorded generally about the middle of the month, particularly on the 16th.

Relative humidities were slightly above normal in the lower levels; at greater heights the departure was positive in the Southern but negative in the Northern States.

In conformity with the positive temperature departure vapor pressures were in generally somewhat higher than normal.

Resultant winds (Table 2) did not differ greatly from normal except near the surface at Ellendale, where an east component prevailed as against the usual west component. In the higher levels at this station, moreover, and at all altitudes above the other stations except Broken Arrow, the winds were somewhat more southerly than normal. This fits in well with the observed positive temperature departure.

Unusually high winds, 30 m. p. s. or more, were observed as follows:

[By means of kites.]

Station.	Date.	Direction.	Velocity.	Altitude.
			m. p. s.	*Meters.*
Groesbeck, Tex.	8	s.	31	1,500

[By means of pilot balloons.]

Aberdeen, Md.	15	wnw.	32	2,700
Do.	21	wnw.	40	5,900
Do.	24	n.	33	4,700
Do.	29	w.	42	10,400
Broken Arrow, Okla.	1	w.	30	5,800
Do.	14	nw.	32	3,500
Do.	18	wsw.	39	4,400
Do.	20	wnw.	54	9,000
Do.	21	wnw.	42	9,100
Burlington, Vt.	3	nw.	34	6,800
Do.	5	nnw.	34	5,700
Camp Benning, Ga.	20	w.	30	5,200
Carlstrom Field, Fla.	3	w.	30	15,000
Do.	24	ne.	38	2,100
Due West, S. C.	11	wsw.	39	1,700
Do.	20	w.	30	5,300
Fort Sill, Okla.	11	wnw.	31	3,300
Groesbeck, Tex.	8	wsw.	32	1,300
Do.	11	w.	30	5,300
Do.	19	w.	31	6,000
Hampton, Va.	11	sw.	45	1,500
Do.	20	wnw.	30	2,500
Do.	24	nnw.	33	4,000
Langley Field, Va.	11	sw.	33	1,000
Lansing, Mich.	9	sw.	36	1,000
Do.	15	nw.	38	4,400
Do.	17	w.	30	1,900
Lee Hall, Va.	1	wnw.	30	3,100
Do.	12	w.	30	3,700
Madison, Wis.	16	s.	34	600
Mather Field, Calif.	1	n.	32	4,100
Do.	11	nw.	30	5,000
Do.	16	nw.	36	3,400
Do.	17	n.	30	4,800
Rockwell Field, Calif.	13	wnw.	34	3,700
Ross Field, Calif.	9	nnw.	39	3,900
Do.	15	nw.	35	5,000
Royal Center, Ind.	12	wnw.	34	3,000
San Diego, Calif.	16	nw.	33	3,000
Washington, D. C.	2	nnw.	37	2,800
Do.	11	sw.	32	1,500
Do.	15	nw.	36	1,700
Do.	20	wnw.	35	2,800

[1] For the first time it is possible to compare current with normal values at this station. This comparison must, however, be made with the reservation that the station has been in existence only one year as against three to six years for the other stations. It must be further borne in mind that these are not true "normals" for which, of course, additional years' observations are necessary. They are nevertheless fairly close approximations.